

Remarks

Claims 9 - 25 are pending. Favorable reconsideration is respectfully solicited.

Claims 16 and 21 have been rejected under 35 U.S.C. § 112 ¶2 as indefinite, and have been amended accordingly. Withdrawal of the rejection of these claims on this basis is respectfully solicited.

Claims 9 - 22 have been rejected under 35 U.S.C. § 103(a) over *Sejpk* U.S. Patent 5,336,715 ("*Sejpk*") in view of Ikeda U.S. 6,437,008 ("*Ikeda*"). Applicants respectfully traverse this rejection.

The present invention is directed to concentrated oil-in-water emulsions of amino-functional organopolysiloxanes which contain minimally 45 weight percent by weight of the latter, have $\text{pH} \geq 7.5$, and a viscosity of not more than 50,000 mPa·s.

In the past, attempts to provide high solids content emulsions of amino-functional organopolysiloxanes have resulted in water-in-oil (W/O) emulsions, not oil-in-water (O/W) emulsions. Moreover, as indicated in the specification, and as confirmed by *Sejpk* in column 1, such emulsions are not dilutable with water, or are dilutable only with difficulty, requiring several processing steps, since phase inversion of the W/O emulsion into a O/W emulsion must take place. Being initially a W/O emulsion, the droplets are hydrophobic and water-incompatible, which is directly the opposite of O/W emulsions. Moreover, dilute compositions, whether prepared by dilution of a W/O emulsion (with its many process steps), or as a direct preparation by emulsifying a small amount of organopolysiloxane into water, are unstable. See, *e.g.* *Sejpk* at column 1, lines 44 - 47.

Sejpk partially solved this problem by rendering the amino-functional organopolysiloxanes soluble or at least self-dilutable by reacting the amino groups of the amino-functional organopolysiloxane with a water soluble acid. As a result, the ammonium salt groups

Reply to Office Action of September 17, 2009

help "solubilize" the organopolysiloxane. *Sejпка* mixes these salts with a surfactant to form a water-free concentrate which is dilutable with water. However, the resulting concentrate is not an aqueous emulsion, nor does it contain any amino-functional organopolysiloxane. Rather, it contains an ammonium-functional organopolysiloxane. The pH is not ≥ 7.5 , but 7.0 or less (salt). Due to the differences between the basic amino groups (Lewis base) and the ammonium groups (Bronsted acid), the use properties of the respective organopolysiloxanes are far different. The concentrates of *Sejпка* can be diluted with water to form aqueous emulsions of low solids content. See, *e.g.* Example 2(C), where a less than 1% solids aqueous emulsion was formed.

Due to solubilizing salt formation and the presence of ammonium groups rather than amino groups, the pH of the concentrates of *Sejпка* do not meet Applicants' requirement of a pH of at least 7.5. The compositions of *Sejпка* and those of Applicants are fundamentally different. *Sejпка* does not teach or suggest emulsifying an amino-functional organopolysiloxane into water with the aid of an emulsifier. Rather, he teaches preparing a non-aqueous concentrate of ammonium salt-functional organopolysiloxane and emulsifier, which may subsequently be diluted with water.

As acknowledged by the Office, *Sejпка* also does not disclose, teach, or suggest O/W emulsions. The Office cites *Ikeda* for this deficiency. However, Applicants respectfully submit that *Ikeda* does not supply any deficiency of *Sejпка*, and moreover, that one skilled in the art would not be motivated to combine *Sejпка* and *Ikeda*, and that if combined, their combination does not teach or suggest the claimed invention.

Ikeda is directed to preparing highly concentrated emulsions of very highly viscous organopolysiloxanes in which the particle size of the dispersed phase is very large, and is from 0.1 to 1.00 mm (100 - 1000 μm ; 100,000 - 1,000,000 nm). These compositions are stated to have numerous uses, but their principle use is in hair care.

At column 3, lines 28 - 47, numerous organo groups are listed in a long "shopping list", among which are amino-substituted alkyl groups. The preferred groups are methyl groups.

Reply to Office Action of September 17, 2009

All the examples of *Ikeda* employ ordinary, non-functional trimethylsilyl-terminated polydimethylsiloxanes. *Ikeda* does not teach or suggest the use of ammonium salt-functional organopolysiloxanes as required by *Sejpka*, and the invention of *Ikeda* and that of *Sejpka* are diametrically opposed.

At column 6, lines 13 - 17, *Sejpka* indicates that irrespective of the amount of water, his compositions are clear to slightly opaque. In order to be so, the ammonium salt-functional organopolysiloxanes must either be in solution (thus having a particle size equal to the size of the individual molecules), or must be in very small particle sizes, less than 1 μm . Otherwise, the particles would scatter light and the compositions would be highly opaque or white. This feature of *Sejpka* indicates that his particles are very, very small. On the other hand, for the compositions of *Ikeda*, the particle sizes are required to be very large, 0.1 mm (100 μm) to 1 mm (1000 μm). These very large particles are effective light scatterers, and clear or slightly opaque compositions cannot be obtained.

Moreover, the organopolysiloxanes of *Sejpka* have very low viscosities, 5 - 5000 cSt, approximately equal to 5 - 5000 mPas, (*Sejpka*, col. 3, lines 22 - 24), while the organopolysiloxanes of *Ikeda* have minimally a viscosity of 1×10^5 mPas (col. 2, lines 46 - 59). For reference, smooth peanut butter has a viscosity of 1.2×10^6 , while CRISCO™ shortening ranges from 1×10^6 to 2×10^6 . The organopolysiloxanes of *Ikeda* are very viscous organopolysiloxanes, and there is no evidence that they would even work in the invention of *Sejpka*.¹

One skilled in the art would not be motivated to combine these references, since *Sejpka* is directed to non-aqueous (but dilutable) concentrates of low viscosity ammonium-salt-functional organopolysiloxanes which form aqueous emulsions (when diluted) of very small

¹ Since the *Ikeda* organopolysiloxanes are highly viscous, the tendency to coalesce and thus render the *Ikeda* emulsions unstable is low. The organopolysiloxanes of *Sejpka* are not viscous, but quite fluid. Honey, for example, has a viscosity of about 3000 mPas at 20°C. Such liquid organopolysiloxanes readily coalesce. Consider vinegar and oil salad dressing which readily separates after even vigorous shaking.

Reply to Office Action of September 17, 2009

particle size, whereas *Ikeda* is directed to aqueous emulsions of very highly viscous organopolysiloxanes, none of which are ammonium salt-functional, in which the particle size is enormous (for an emulsion). There is no motivation to combine, and there is also no evidence of motivation to combine. As is well known, there must be such evidence. The requirement for this evidence is "rigorous" and the evidence must provide "clear and particular" motivation to combine, a very high standard. See, *e.g. In re Dembiczak*, 50 USPQ 2d 1614 (Fed. Cir. 1999). The rejection should be withdrawn for these reasons.

Moreover, if combined, the combination does not teach or suggest the claimed invention. It is well established that isolated teachings of references in a rejection over a combination of references may not be combined without also including all the salient features of the references. As stated in *In re Wesslau*, 147 USPQ 391, 393 (CCPA 1965):

The ever present question in cases within the ambit of 35 U.S.C. § 103 is whether the subject matter as a whole would have been obvious to one of ordinary skill in the art following the *teachings* of the prior art at the time the invention was made. It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art.

Wesslau has been the law for more than four decades.

Here, the use of ammonium salt-functional organopolysiloxanes is a salient feature of *Sejпка*. Without it, there is no *Sejпка* invention. Thus, any combination of *Sejпка* and *Ikeda* must include that feature. Yet if this feature is included, as it must be under prevailing law, the result is not only not Applicants' invention ($\text{pH} \geq 7.5$), but moreover, is not compatible with *Ikeda*, as the ammonium salt groups of *Sejпка* would cause small particles to be formed in the dispersed phase, not the very large 0.1 mm to 1 mm particles required by *Ikeda*, a salient feature of his invention.

Reply to Office Action of September 17, 2009

Thus, even if one skilled in the art would be motivated to combine *Sejпка* with *Ikeda*, the combination does not teach or suggest the claimed invention. Withdrawal of the rejection of the claims over *Sejпка* in view of *Ikeda* is thus respectfully solicited.

Claim 22 requires the pH of Applicants' amino-functional organopolysiloxane emulsion to be ≥ 8 , much further away from the pH of *Sejпка's* ammonium salts.

New claims 23 - 25 have been added to more particularly point out and distinctly claim what Applicants regard as their invention. In claims 23 - 24, the mean particle size of the dispersed phase is from 10 nm to 500 nm and 10 nm to 300 nm, respectively. These are very small particle sizes, a principle advantage of the present invention. It is noted that the minimum particle size required by *Ikeda* is 100,000 nm, some 200 times larger than the largest particle size of claims 23 and 24 (more than two orders of magnitude larger). *Ikeda* certainly does not teach or suggest this limitation, but teaches strongly away from it. Teaching away is strong evidence of non-obviousness. *W.L. Gore v. Garlock*, 220 USPQ 303 (Fed. Cir. 1983).

Claim 25 requires that the particle size distribution of a diluted emulsion prepared from Applicants' concentrated emulsions be smaller than the particle size distribution obtained by a direct preparation of an aqueous emulsion of the same organopolysiloxane content. This result is surprising and unexpected, and certainly not predictable.

It is further noted that claim 21 requires organopolysiloxane (A) to have a viscosity of 2 to 80,000 mPas, while *Ikeda* requires a minimum viscosity of 1×10^5 mPas.

All of the claims discussed immediately above are separately patentable.

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Reply to Office Action of September 17, 2009

Applicants submit that the claims are now in condition for Allowance, and respectfully request a Notice to that effect. If the Examiner believes that further discussion will advance the prosecution of the Application, the Examiner is highly encouraged to telephone Applicants' attorney at the number given below.

Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

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